WHAT IS CLAIMED IS:

1. A mutant antibody comprising a reactive site not present in the wild-type of said antibody and a complementarity-determining region that specifically binds to a metal chelate, wherein said reactive site is in a position proximate to or within said complementarity-determining region.

2. The mutant antibody according to claim **1**, wherein said reactive site is a side-chain of a naturally occurring or non-naturally occurring amino acid.

3. The mutant antibody according to claim **2**, wherein said reactive site is the –SH group of cysteine.

4. An isolated nucleic acid encoding the mutant antibody according to claim **1**.

5. The isolated nucleic acid according to claim **4**, further comprising a promoter operably linked to the nucleic acid sequence encoding the antibody.

6. An expression vector comprising the nucleic acid according to claim **5**.

7. A host cell comprising the expression vector according to claim **6**.

8. The nucleic acid according to claim **4**, comprising the sequence of SEQ. ID NO 2 (**FIG. 9**).

9. The nucleic acid according to claim **4**, comprising SEQ.ID NO. 4 (**FIG. 11**).

10. A polypeptide comprising a peptide sequence according to SEQ. ID NO.:5 (**FIG. 11**).

11. A polypeptide comprising a peptide sequence according to SEQ. ID NO.: 7 (**FIG. 14**).

12. A nucleic acid encoding a polypeptide according to claim **14**.

13. A nucleic acid encoding a polypeptide according to claim **11**.

14. The mutant antibody according to claim 1, wherein said mutant antibody is a mutant of CHA255.

15. The mutant antibody according to claim 14, wherein serine-95 of the light-chain is substituted by a cysteine residue.

16. The mutant antibody according to claim 1, wherein said antibody is a bifunctional antibody further comprising a second complementarity-determining region that specifically binds to a cell-surface antigen.

17. The mutant antibody according to claim 1, further comprising a targeting moiety covalently attached thereto.

18. The mutant antibody according to claim 17, having the structure:

Ab-L-T

wherein,

Ab represents said antibody;

L is a chemical bond or linking group that may contain one or more sites; and

T is said targeting moiety.

19. The mutant antibody according to claim 17, wherein said targeting moiety is an antibody that binds specifically to a cell surface antigen.

20. The mutant antibody according to claim 1, further comprising said metal chelate bound to said complementarity-determining region, wherein said chelate comprises a reactive functional group of complementary reactivity to said reactive site of said antibody.

21. The mutant antibody according to claim 20, further comprising a covalent bond ~~between~~ formed by reaction of said reactive site of said antibody and said reactive functional group of said chelate.

22. The mutant antibody according to claim 20, wherein said reactive site of said chelate is an acrylamido moiety.

23. The mutant antibody according to claim **1**, wherein said metal chelate is a polyaminocarboxylate chelate of a metal ion selected from the group consisting of transition metal ions and lanthanide ions.

24. A pharmaceutical composition comprising the mutant antibody according to claim **17**, and a pharmaceutically acceptable carrier.

25. A mutant antibody comprising a cysteine residue not present in the wild-type of said antibody and a complementarity-determining region that specifically binds to a metal chelate, wherein said cysteine is in a position proximate to or within said complementarity-determining region.

26. An isolated nucleic acid encoding the mutant antibody according to claim **25**.

27. The isolated nucleic acid according to claim **26**, further comprising a promoter operably linked to the nucleic acid sequence encoding the antibody.

28. An expression vector comprising the nucleic acid according to claim **26**.

29. A host cell comprising the expression vector according to claim **28**.

30. The antibody according to claim **25**, wherein said antibody is a bifunctional antibody further comprising a second complementarity-determining region that specifically binds to a cell-surface antigen.

31. The mutant antibody according to claim **25**, further comprising a targeting moiety covalently attached thereto.

32. The mutant antibody according to claim **31**, having the structure:

Ab-L-T

wherein,

Ab represents said antibody;

L is a chemical bond or linking group that may contain one or more functional groups; and

T is said targeting moiety

33. The mutant antibody according to claim 31, wherein said targeting moiety is a member selected from the group consisting of antibodies and antibody fragments, each of which bind specifically to a cell surface antigen.

34. The mutant antibody according to claim 25, further comprising said metal chelate bound to said complementarity-determining region, wherein said chelate comprises a reactive functional group of complementary reactivity to the –SH side-chain of said cysteine residue.

35. The mutant antibody according to claim 34, further comprising a covalent bond formed by reaction of the –SH side-chain of cysteine and said reactive functional group of said chelate.

36. The mutant antibody according to claim 35, wherein said reactive functional group of said chelate is an acrylamido moiety.

37. The mutant antibody according to claim 25, wherein said metal chelate is a polyaminocarboxylate chelate of a metal ion selected from the group consisting of transition metal ions and lanthanide ions.

38. A pharmaceutical composition comprising the mutant antibody according to claim 31, and a pharmaceutically acceptable carrier.

39. A method of treating a patient by administration of a metal chelate, said method comprising the steps of :

(a) administering to said patient a pretargeting reagent;

(b) following step (a), administering to said patient a mutant antibody comprising;

(i) a complementarity-determining region that specifically binds to said metal chelate;

(ii) a reactive site not present in the wild-type of said antibody and, wherein said reactive site is in a position proximate to or within said complementarity-determining region; and

(iii) a recognition moiety that binds specifically with said pretargeting moiety, thereby forming a complex between said pretargeting reagent and said mutant antibody; and

(c) following step (b), administering to said patient said metal chelate, wherein said chelate comprises a reactive functional group having a reactivity complementary to the reactivity of said reactive site of said antibody, thereby;

(i) specifically binding said chelate to said complementarity-determining region; and

(ii) following step (i), forming a covalent bond between said mutant antibody and said metal chelate through coupling the reactive functional group of said chelate with said reactive site of said mutant antibody.

40. The method according to claim **39**, further comprising, between steps (a) and (b), administering a clearing agent to said patient.

41. A method of treating a patient by administration of a metal chelate, said method comprising the steps of :

(a) administering to said patient a mutant antibody comprising;

(i) a complementarity-determining region that specifically binds to said metal chelate;

(ii) a reactive site not present in the wild-type of said antibody and, wherein said reactive site is in a position proximate to or within said complementarity-determining region; and

(iii) a targeting moiety that binds specifically to a cell by binding with a member selected from the group consisting of cell surface receptors and cell surface antigens, thereby forming a complex between said mutant antibody and said cell; and

(b) following step (a) administering to said patient said metal chelate, wherein said chelate comprises a reactive functional group having a reactivity complementary to the reactivity of said reactive site of said antibody, thereby;

(i) specifically binding said chelate to said complementarity-determining region; and

(ii) following step (i), forming a covalent bond between said mutant antibody and said metal chelate through coupling the reactive functional group of said chelate with said reactive site of said mutant antibody.